CLAIMS

1. A method for screening nucleation tendency of a molecule in a fluid or gas comprising
   i. levitating at least one droplet of the fluid or gas in a levitator,
   ii. delivering at least one substance to the levitated droplet with a dispenser for delivering a substance,
   iii. detecting the nucleation tendency. and
   iv. scoring the nucleation tendency.

2. The method according to claim 1, wherein the nucleation tendency is detected manually by visual surveillance.

3. The method according to claim 1, wherein the nucleation tendency is detected by any of the means selected from the group consisting of Raman spectroscopy, multi-angle light scattering in combination with Raman spectroscopy, nephelometry, and an illuminator source, to obtain a quantitative measurement of turbidity, precipitate and/or aggregate formation in the at least one droplet.

4. The method according to any of claims 1-3, wherein the droplet is levitated using a levitator from the group selected of an acoustic, electrostatic, air flow, magnetic levitator and any hybrids thereof, such as acoustic-electrostatic hybrid levitator.

5. The method according to any of claims 1-4, wherein the dispenser is a piezoelectric flow-through dispenser.

6. The method according to any of claims 1-5, wherein the substance delivered to the droplet is a protein, a membrane protein, a peptide, such as an oligopeptide or a polypeptide, an enzyme, a receptor, a drug compound, nucleic acid, such as DNA or RNA; oligonucleotide, polynucleotide, a macromolecule, macromolecular assembly or complexes thereof.

7. The method according to any of claims 1-6, wherein the substance delivered to the droplet is a substance influencing the nucleation conditions.

8. The method according to any of claims 1-7, wherein the droplet is in the

range of 1 fl to 100 μl.

9. The method according to any of claims 1-8, wherein the nucleation tendency is detected within the range of 10 milliseconds – 10 hours.

10. The method according to claim 9, wherein the nucleation tendency is detected after 10 milliseconds – 5 hours.

11. The method according to claim 9, wherein the nucleation tendency is detected after 10 milliseconds – 30 minutes.

12. A system for screening nucleation tendency comprising
    i. at least one levitator for positioning at least one droplet,
    ii. at least one dispenser for delivering at least one substance to the positioned droplet, and
    iii. one or more means for detecting nucleation tendency in the at least one levitated droplet.

13. The system according to claim 12, wherein the levitator is selected from the group consisting of an acoustic, electrostatic, air flow, magnetic levitator and any hybrids thereof, such as acoustic-electrostatic hybrid levitator.

14. The system according to any of claims 12-13, wherein the dispenser is a piezoelectric dispenser.

15. The system according to any of claims 12-14, wherein the nucleation tendency is detected manually by visual surveillance.

16. The system according to any of claims 12-14, wherein the nucleation tendency is detected by any of the means selected from the group consisting of Raman spectroscopy, multi-angle light scattering in combination with Raman spectroscopy, nephelometry, and an illuminator source, to obtain a quantitative measurement of turbidity, precipitate and/or aggregate formation in the at least one droplet.

17. The system according to any of claims 12-16, wherein the at least one levitated droplet is in the range of 1 fl to 100 μl.

18. The system according to any of claims 12-17, wherein the at least one

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substance delivered to the at least one droplet by the at least one dispenser is a protein, a membrane protein, a peptide, such as an oligopeptide or a polypeptide, an enzyme, a receptor, a drug compound, nucleic acid, such as DNA or RNA; oligonucleotide, polynucleotide, a macromolecule, macromolecular assembly or complexes.

19. The system according to any of claims 12-17, wherein the at least one substance delivered to the at least one droplet by the at least one dispenser is a substance influencing nucleation tendency.

20. The system according to clam 16, wherein the illumination source is arranged so that the at least one levitated droplet is positioned around the illumination source in a way that each suspended droplet can be illuminated by rotating light.

21. Use of a system according to any of claims 12-20, for screening crystallisation conditions or amorphous stage conditions for a molecule such as a protein, a membrane protein, a peptide, such as an oligopeptide or a polypeptide, an enzyme, a receptor, a drug compound, nucleic acid, such as DNA or RNA; oligonucleotide, polynucleotide, a macromolecule, macromolecular assembly or complexes.

22. Use of a method according to claim 1-11, for screening crystallisation conditions or amorphous stage conditions for a molecule such as a protein, a membrane protein, a peptide, such as an oligopeptide or a polypeptide, an enzyme, a receptor, a drug compound, nucleic acid, such as DNA or RNA; oligonucleotide, polynucleotide, a macromolecule, macromolecular assembly or complexes.